Results: The median age of patients who received NAST was 52 years (range 25 - 91 years). 90% received chemotherapy, 64% were assessed with clinical and/or imaging studies, 34% had FNAs, and 2% had preoperative sentinel lymph node biopsies. All patients who had sentinel lymph node biopsies had clinically negative nodes. 91% of patients had nodal irradiation after NAST. On logistic regression analysis, NAST utilization was lower in 3 out of 5 centres compared with the largest centre ($p < 0.05$). Increasing tumour and nodal stage were the main predictors for NAST use (p-value <0.001). There was a decreased use of NAST with time compared to 2007, but this was not statistically significant (p-value 0.34).
Conclusions: Contrary to our initial hypothesis, there has not been a significant increase in NAST over time. Nodal irradiation is used in the majority of patients who received NAST. Clinical nodal status did not predict for subsequent nodal irradiation.

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Comparing simultaneous integrated boost and sequential electron boost technique in radiotherapy for breast cancer

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Purpose/Objective: Comparison of acute radiotherapy side effects and dosimetric parameters between breast cancer patients receiving breast conserving radiotherapy using simultaneous integrated boost (SIB) and sequential electron boost technique.
Materials and Methods: 58 breast cancer patients who underwent Breast Conserving surgery and received adjuvant radiotherapy with either simultaneous integrated photon boost (SIB) or sequential electron boost technique were retrospectively selected. In the SIB group, 30 consecutive patients were treated with a total dose of 45.57Gy to the whole breast and 56.07 Gy to the tumour bed in 21 concomitant fractions from January to May 2013. In the electron group, 28 consecutive patients were treated with a total dose of 50Gy in 25 fractions to the whole breast followed by 16Gy in 8 fractions sequential electron boost to the tumour bed from January to April 2012. Skin toxicities were prospectively assessed during on-treatment follow up using RTOG skin toxicity grading. Boost volume and dose parameters to organ at risk were compared between the 2 groups.
Results: 6.67% and 28.6% of patients developed Grade2 or above skin toxicity by RTOG skin toxicity grading for SIB and electron group respectively (p=0.038). The mean boost volume was 64.2cm^3 and 202.9cm ^{3}for SIB and electron group respectively (p<0.001). There were no statistically significant difference between the mean lung dose :5.52Gy and 5.09Gy for electron and SIB group respectively (p=0.301) ; V20 for lung:9.16% and 8.14% for electron and SIB respectively (p=0.266) ; V10 for heart: 1.74% and 3.16% for electron and SIB group respectively(p=0.107).
Conclusions: Simultaneous integrated boost technique for adjuvant radiotherapy following breast conserving surgery has the benefit of a favorable acute toxicity profile, reduced number of treatment fractions and comparable dose to organ at risk with conventional sequential electron boost technique.

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Single fraction HDR breast brachytherapy boost. Does the implant volume influences long term toxicity?

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Purpose/Objective: The dose-volume effect of radiotherapy on breast tissue is not well known existing conflicting results in the literature. Some studies suggest that there are higher rates of fibrosis in patients treated with large boosts and other studies downplay the impact of the implant volume, suggesting that what really determines the increase of fibrosis is the total dose of the boost and surgical factors like a poorly planned excision and a large volume of breast removed. Most of the studies that address these issues are old and usually boost large volumes of the breast, even more than 100cc. Current modalities of conservative treatment with tighter surgical margins and imaging techniques that allow us to localize the tumor bed more accurately have meant that the volumes of brachytherapy implants have decreased dramatically and this may have influence in toxicity. The purpose of the study was to evaluate if there is any relationship between the implant volumes with long term toxicity.
Materials and Methods: We evaluated all the patients who received a High Dose Rate (HDR) boost in our department after irradiating the whole breast following conservative surgery. In all patients an MRI of the breast was performed before surgery to determine the most appropriate surgical modality. We used this MRI and the planning CT (surgical clips, seroma) as a reference to perform the brachytherapy implant and minimize the boost volume.
Results: We treated 220 boosts with a mean following time of 14months (6-24mo). 87.7% breasts were previously treated under the hypofractionated scheme of the START B trial (40,05Gy/15fractions) and 12.3% were conventional treatments (50Gy/25 fractions). 50.9% were left breast cancers and the tumor bed was localized in upper external quadrant in 30%. 98.2% received 8Gy and 1.8% 10Gy. The mean implant volume of the isodose of the 90% of the prescribed dose was 8.19cc, 120%: 1.25cc, 150%: 0.16cc and 200%: 0.04cc. Prescription dose was based on the modified Paris dosimetry treatment. Chronically, fibrosis was absent or mild in 83.2%%. The remaining patients suffered from moderate fibrosis (grade 2). Only one case of grade 3 was reported. 7.3% of patients reported visible and palpable edema in the skin over the implant. We did not find a statistically significant relation between the implant volumes and the grade of long term fibrosis or edema.
Conclusions: HDR-BRT boost after whole breast irradiation is a safe and widespread technique to administer a breast boost in patients at risk, which is not exempt from suffering long term complications. In our retrospective study we couldn´t prove the relationship between the implant volume and long term toxicity (fibrosis and edema). Prospective studies comparing different boost doses and volumes are needed to